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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,433	10/02/2003	Mingming Fang	28569/38510	9007

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EXAMINER	
GEORGE, PATRICIA ANN	

ART UNIT	PAPER NUMBER
1765	

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/677,433	FANG ET AL.	
	Examiner	Art Unit	
	Patricia A. George	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-13* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-2-03 & 2-28-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-13, are drawn to a composition, classified in class 252, subclass 79.1.

II. Claims 14-22, are drawn to method of planarizing, classified in class 438, subclass 692.

Inventions I and II are related as composition and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the polishing compound could be used to planarize a single layer film on a bare silicon wafer use to monitor the standard deviation of an etch process.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and have acquired a sep.te status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Rick Anderson on June 8, 2005 a provisional election was made with traverse to prosecute the invention of Fang et al.,

claims 14-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-13 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the first p.graph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 14-22 are rejected under 35 U.S.C. 112, first p.graph.

As to claim 14, the rejection is based on a disclosure that is not enabling. The claim is not enabled for adding sodium ions which are essential to the practice of the invention (see last step of the claim which requires a presence of sodium), but not included in the claim and is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Claim 14 cites, said "exchange cations selected from the group consisting of ...except for lithium or sodium;" and then continued to say, "filtering the water, containing sodium ions". There is no mention of where the sodium comes from, although there is a sep.tion process in the claim.

Claims 15-22 are also rejected under 112 because they directly or indirectly depend on claim 14.

Claim Rejections - 35 USC § 112

The following is a quotation of the second p.graph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 14, and all claims that are directly or indirectly dependent on it are rejected under 35 U.S.C. 112, second p.graph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection is based on the language of the claim being indefinite because the process step related to the addition or removal of sodium ions are unclear.

Claim Rejections - 35 USC § 112

The following is a quotation of the second p.graph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 is rejected under 35 U.S.C. 112, second p.graph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 is indefinite because it has improper Markush group language. The examiner suggests the applicant replace "selected from...nitrate, and..." with --*selected from the group consisting of: a peroxide, a sulfate, a persulfate, and a nitrate.*--

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a pers on having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 14-22 rejected under 35 U.S.C. 103(a) as being obvious over Mathur et al. (US 2004/0216388A1) in view of Millipore Corporation (Lit. no. TB032; Rev. C; 06/03; 03-117; © 2003 Milipore Corporation Billericia, MA 01821 U.S.A.)

Mathur discloses a method of planarizing or polishing a surface (p. 15, l. 1-2) comprising contacting a surface (p. 42, l. 5) with a composition comprising (p.. 30, l. 1) (a) a liquid carrier (p. 47, l. 5), and (b) solids (p. 45, l. 1-3) comprising about 10-100 wt. % (p.45, l. 1-2) of ion-exchanged smectite clay (p. 51, l. 3) abrasive particles (p. 15, l. 13), wherein about 90% or more of the abrasive particles (by number) have a particle size in the range of about 0.02 .mu.m to 20 .mu.m (p. 61, l. 9-10 cites an overlapping range). Mathur discloses ion-exchanged (p. 51, l. 6-7) smectite clay (p. 51, l.3) abrasive particles (l.1) are modified via complexation with other components (p.51, l.2), to provide exchange cations (fig. 1) selected from the group consisting of ammonium cations (p. 53, l. 5), any alkali metal cations and alkaline earth metal cations (p.52, l. 5 -

aluminum oxide hydroxide is written on the limitation) except for lithium or sodium ion-exchanging (fig. 2, discussed in p. 53, shows sodium being exchanged) said exchange cations for exchangeable cations in the smectite clay to form an ion-exchanged smectite clay (p. 52, l. 5 is written on smectite ion exchanges clay). Mathur discloses that is it is well known that these types of layered materials (such as smectite clay) may be modified by a variety of ion exchange and intercalation processes (p. 51, l. 5-7). Mathur includes ion exchange claimed when disclosing that it is known in the art that the same function is provided through a variety of methods.

Mathur is silent as to use of a hollow-fiber tangential flow filtration apparatus to separate the sodium-containing water from the ion exchanged clay.

Millipore Corporation teaches membrane based tangential flow filtration (TFF) (p. 1, l. 3-4). As one of many manufacturers of TFF apparatus, Millipore teaches full details on TFF topics such as: purpose (p.1), basics (p. 3), process goals such as "buffer exchange" and "contamination removal" which are written on the topic of ion exchange (p. 5), choosing equipment (p. 5), types of membranes, formats of fabricated modules including the most common types: flat (p. 7), spiral (p. 8), and hollow (p. 8), process optimization (p. 9), performance characterization (p. 13), testing, installation, post process product recovery (p. 16), yield (p. 19), quality (p. 20), controlling bioburdens (p. 21), and process economics (p. 22). Millipore Corporation extensively teaches the art of ion exchange via TFF filtration and post filtration processing.

Millipore Corporation does not teach planarizing or polishing a surface.

It would have been obvious to one ordinary skill in the art at the time of invention was made, to use hollow TFF apparatus, as stated in claims 14, and 15, because it is a widely marketed product for the filtration of sludge i.e. slurry. The method of filtration claimed in the instant invention is clearly obvious.

As for claim 16, Mathur discloses the surface is from an integrated circuit (P.. 15, l. 1-2), a memory disk, or a rigid disk surface.

As for claim 17, Mathur discloses the composition further includes a chemical accelerator selected from the group consisting of: a peroxide (P.. 31, l. 4), a sulfate (P.. 32, l.4), a persulfate (P.. 31, l.1), and a nitrate (P.. 31, l. 4-5).

As for claim 18, Mathur discloses the chemical accelerator is selected from the group consisting of: hydrogen peroxide (P.. 31, l. 4), ammonium persulfate (P.. 31, l.1), iron (III) nitrate (P.. 31, l. 5-6), and hydroxylamine nitrate.

As for claim 19, Mathur discloses sufficient cations (fig. 1, part 14) are added to the mixture of smectite clay (10) and water to provide complete exchange of the cations (fig. 1) for the exchangeable cations (12 replaced by 14) in the smectite clay (10).

As for claim 20, 21, and 22, in one example Mathur discloses the ion-exchanged smectite clay was filtered through a Whatman filter having a pore size of 2. um (P.. 81, l. 5) which teaches a particle size that is encompassed by all claimed ranges.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Both USPN 6,475,071 and USPN 5,575,915 teach aspects of the instant invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia A. George whose telephone number is (571) 272-5955. The examiner can normally be reached between 7:00am and 4:30pm on weekdays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PAG
06/06

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